

“*What is computer science?*” The original
debates surrounding the birth of computer
science and the myths born out of them
(1960-1975) : a selected bibliography.

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Abstract

This publication concludes our series “What is computer science? On two crises.” Having covered, perhaps contributed to its current crisis, we turn at last to the original : the birth of computer science as a constituted discipline amidst questioned and defended scientificity in the 1960s and 1970s. We give a summary of our previous findings as introduction, and a bibliography with helpers.

Introduction : a changing culture

What is computer science?

This question, which surrounded the birth to computer science as a constituted discipline, continues to accompany its young, but large existence.

No other science matters more than it now : it has penetrated all others. It is likely to be defining for our civilization in decades, and centuries to come. Perhaps, it will also be its end.

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Many continue to focus on bankers and economists : these important economists cannot be blamed, they are of their times, and cannot escape them – as we are of ours.

One of them proposes universal basic income, the other progressive taxation.

But, they mistake “old new cowboys” for “new cowboys”, and thus miss the new ones – we have argued.

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Fein, Gorn, Forsythe, Conte, Atchinson... : the pioneers of computer science as a ‘constituted’ discipline. Programs, departments, curricula, etc.

In the beginning, computer science and computer scientists had no names and no fixed identities : spaces of uncertain boundaries, filled with various scientists brought together by common preoccupations around what some of them would soon call “the phenomena surrounding computers”.

Our new computer scientists have forgotten, and in fact do not know the history of their own discipline : for, among “phenomena”, they were first.

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“What is computer science?” : a title characteristic of papers from this period, which is to say the 1960s and 1970s.

Those who answered tackled this problem in various ways, each giving the question a new inflection in the process : some answered head on, and thought well to establish the scientificity of their budding discipline by comparison to other, more established ones¹.

Others focused on issues of curriculum².

Notably, others yet, among ACM members and their various committees, had recognized the importance of societal issues early on (Jean Sammet, if we are correct, played a role here.)

But, soon enough – for they were alone in being able to undertake this – computer scientists began to answer by looking back at their ancestors, going as far back as they could – even the Summerians, and establishing their heroes. Among them, Donald Knuth occupies a special place.

He was part of the model of the “computer-scientist-turned-historian”, as we have put³. Next to them stood the soon to be “journalists-turned-historian”, by default too.

¹So, did the trio of Turing Award laureates.

²Atchison, Conte et al.

³As Goldstine had been.

Their accounts mixed tribalism, and allegiance to their own institutions, and people, and ignorance of the historical discipline and its own methods.

So, for instance, when Forsythe, and Knuth following, insisted on tales of Stanford as ‘the first’ computer science department.

The current state of our understanding is Purdue, with Wisconsin playing a notable role too for having awarded some of the first advanced degrees, including to minority groups.

Gorn played at least as important a role as Forsythe, if not greater⁴.

Long gone are the days of the first crisis of computer science : in the 1960s and 1970s, computer scientists were busy defending their discipline and creating a prize for it : they thought establishing parallels with mathematics and the Nobel would help⁵.

But, *long, long* gone are those days. As early as the 1980s, it was mathematicians, and phycists, like Feynman⁶, who began to reflect on this oh so important science of an immense future. They did so, because not only did it provide them with tools they did not come up with, but inevitably put – now their – existence into question.

A mirror to a mirror.

With this, we conclude this series :

The current crisis of computer science : the identity and responsibility of computer scientists.

We gave our answer, which one day may be theirs : computer science is a social science.

The very earliest such publication came in the form of a... utopia!⁷

“One indicator of a changing culture is the set of new names and words for new ideas, things, modes of behavior, activities, vocations, avocations, intellectual disciplines”

⁴Forsythe cites him multiple times in his earliest writings (e.g. Forsythe 1965 and 1966).

⁵Dijkstra and Knuth had concentrated on establishing links with the “queen” discipline of mathematics. See Dijkstra 1974 and Knuth 1974.

⁶*Lectures on Computation*.

⁷Fein 1961.

Bibliography

Helpers

- Samuel Conte : founder of the computer science department at Purdue.
- Edsger Dijkstra : Turing Award 1972. Eindhoven then Austin.
- George Forsythe : founder computer science department at Stanford.
- Saul Gorn : Pennsylvania.
- Richard Hamming : Turing Award 1968.
- Donald Knuth : Turing Award 1974. Stanford.
- Allen Newell : Turing Award 1975 (with Simon). Carnegie.
- Alan Perlis : Turing Award 1966. Purdue then Carnegie, and Yale.
- Herbert Simon : Turing Award 1975 (with Newell). Carnegie.

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